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Patent  
Attorney Docket No.: 85773-229

**AMENDMENTS TO THE CLAIMS**

Please find below a complete listing of the claims of the application, including their status as effected by the present amendment:

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1.(original) In an optical network comprising a plurality of sites, a method of carrying out performance equalization of a plurality of channels, wherein each channel travels through the network from one of the sites, called an "add" site for that channel, to another one of the sites, called a "drop" site for that channel, comprising:

- 10       determining a channel-specific figure of merit for each channel;
- determining a site-specific figure of merit for each site that is a drop site for at least one channel; and
- adjusting a transmit power of each channel as a function of the channel-specific figure of merit for that channel and as a function of the site-specific figure of merit for that
- 15       channel's drop site.

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2.(original) A method as claimed in claim 1, wherein each channel from among the set of channels either dropped at or travelling through any one site occupies a distinct wavelength of light, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel comprises determining a wavelength-specific figure of merit for each channel dropped at the particular site and evaluating a function of each such wavelength-specific figure of merit.

3.(original) A method as claimed in claim 2, wherein said function is an averaging function.

4.(original) A method as claimed in claim 2, wherein said function is the arithmetic mean.

30 5.(original) A method as claimed in claim 2, further comprising:

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determining, for each site that is a drop site for at least one channel, the maximum and minimum wavelength-specific figures of merit;

wherein determining a site-specific figure of merit for each site that is a drop site for at least one channel is performed only if the difference between the maximum and minimum wavelength-specific figures of merit for at least one site that is a drop site for at least one channel is greater than a threshold.

6.(original) A method as claimed in claim 2, wherein adjusting the transmit power of a particular channel comprises:

10 comparing the channel-specific figure of merit for the particular channel to the site-specific figure of merit for the particular channel's drop site; and

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if the channel-specific figure of merit for the particular channel is less than the site-specific figure of merit for the particular channel's drop site, increasing the transmit power of the particular channel;

15 if the channel-specific figure of merit for the particular channel is greater than the site-specific figure of merit for the particular channel's drop site, decreasing the transmit power of the particular channel.

7.(original) A method as claimed in claim 2, wherein increasing or decreasing the transmit power of a channel is performed at that channel's add site.

8.(currently amended) A method as claimed in claim 2, wherein the figure of merit at least one of the site-specific figure of merit and the channel-specific figure of merit is the "Q".

25 9.(currently amended) A method as claimed in claim 2, wherein the figure of merit at least one of the site-specific figure of merit and the channel-specific figure of merit is the bit error ratio (BER).

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10.(original) A method as claimed in claim 1, wherein each channel from among the set of channels either dropped at or travelling through any one site occupies a distinct wavelength of light, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel comprises determining a wavelength-specific figure of merit for each channel dropped at or travelling through the particular site and evaluating a function of each such wavelength-specific figure of merit.

11.(original) A method as claimed in claim 10, wherein said function is an averaging function.

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12.(original) A method as claimed in claim 10, wherein said function is the arithmetic mean.

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13.(original) A method as claimed in claim 10, further comprising:  
determining, for each site that is a drop site for at least one channel, the maximum and minimum wavelength-specific figures of merit;

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wherein determining a site-specific figure of merit for each site that is a drop site for at least one channel is performed only if the difference between the maximum and minimum wavelength-specific figures of merit for at least one site that is a drop site for at least one channel is greater than a threshold.

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14.(original) A method as claimed in claim 10, wherein adjusting the transmit power of a particular channel comprises:

comparing the channel-specific figure of merit for the particular channel to the site-specific figure of merit for the particular channel's drop site; and

if the channel-specific figure of merit for the particular channel is less than the site-specific figure of merit for the particular channel's drop site, increasing the power of the particular channel;

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if the channel-specific figure of merit for the particular channel is greater than the site-specific figure of merit for the particular channel's drop site, decreasing the power of the particular channel.

5 15.(original) A method as claimed in claim 14, wherein increasing or decreasing the transmit power of a channel is performed at that channel's add site.

16.(original) A method as claimed in claim 10, wherein the figure of merit is the optical signal-to-noise ratio.

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17.(original) A method as claimed in claim 1, wherein each channel from among the set of channels either dropped at or travelling through any one site occupies a distinct wavelength of light, wherein determining a channel-specific figure of merit for a particular channel comprises determining a figure of merit for the particular channel at the  
15 particular channel's drop site.

18.(original) A method as claimed in claim 17, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel comprises determining a wavelength-specific figure of merit for each channel dropped at the  
20 particular site and evaluating a function of each such wavelength-specific figure of merit.

19.(original) A method as claimed in claim 18, further comprising:

determining, for each site that is a drop site for at least one channel, the maximum and minimum wavelength-specific figures of merit;

25 wherein determining a site-specific figure of merit for each site that is a drop site for at least one channel is performed only if the difference between the maximum and minimum wavelength-specific figures of merit for at least one site that is a drop site for at least one channel is greater than a threshold.

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20.(original) A method as claimed in claim 18, wherein adjusting the transmit power of a particular channel comprises:

comparing the channel-specific figure of merit for the particular channel to the site-specific figure of merit for the particular channel's drop site; and

5 if the channel-specific figure of merit for the particular channel is less than the site-specific figure of merit for the particular channel's drop site, increasing the transmit power of the particular channel;

10 if the channel-specific figure of merit for the particular channel is greater than the site-specific figure of merit for the particular channel's drop site, decreasing the transmit power of the particular channel.

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21.(original) A method as claimed in claim 18, wherein increasing or decreasing the transmit power of a channel is performed at that channel's add site.

15 22.(original) A method as claimed in claim 17, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel comprises determining a wavelength-specific figure of merit for each channel dropped at or travelling through the particular site and evaluating a function of each such wavelength-specific figure of merit.

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23.(original) A method as claimed in claim 22, further comprising:

determining, for each site that is a drop site for at least one channel, the maximum and minimum wavelength-specific figures of merit;

25 wherein determining a site-specific figure of merit for each site that is a drop site for at least one channel is performed only if the difference between the maximum and minimum wavelength-specific figures of merit for at least one site that is a drop site for at least one channel is greater than a threshold.

30 24.(original) A method as claimed in claim 22, wherein adjusting the transmit power of a particular channel comprises:

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comparing the channel-specific figure of merit for the particular channel to the site-specific figure of merit for the particular channel's drop site; and

if the channel-specific figure of merit for the particular channel is less than the site-specific figure of merit for the particular channel's drop site, increasing the transmit  
5 power of the particular channel;

if the channel-specific figure of merit for the particular channel is greater than the site-specific figure of merit for the particular channel's drop site, decreasing the transmit power of the particular channel.

10 25.(original) A method as claimed in claim 22, wherein increasing or decreasing the transmit power of a particular channel is performed at the particular channel's add site.

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15 26.(original) A method of generating power adjustments used to control the transmit power of a plurality of channels, wherein each channel travels from a corresponding "add" site to a corresponding "drop" site in a WDM optical network, wherein each channel from among the set of channels either dropped at or travelling through a site occupies a distinct wavelength of light, the method comprising:

receiving a wavelength-specific figure of merit for each wavelength at each site;

20 determining a channel-specific figure of merit for each channel from the wavelength-specific figures of merit for those wavelength/site combinations corresponding to that channel;

determining a site-specific figure of merit for each site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path; and

25 generating the power adjustment for each channel as a function of the channel-specific figure of merit for that channel and as a function of the site-specific figure of merit for that channel's drop site.

30 27.(original) A method as claimed in claim 26, wherein determining a channel-specific figure of merit for each channel from the wavelength-specific figures of merit for those

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wavelength/site combinations corresponding to that channel comprises selecting the wavelength-specific figure of merit for the one wavelength carrying that channel at that channel's drop site.

5 28.(original) A method as claimed in claim 26, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path comprises evaluating a function of the wavelength-specific figures of merit for each channel dropped at the particular site.

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29.(original) A method as claimed in claim 26, wherein determining a site-specific figure of merit for a particular site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path comprises evaluating a function of the wavelength-specific figures of merit for each channel dropped at or travelling through the particular site.

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30.(original) A method as claimed in claim 26, further comprising:  
determining, for each site that is a drop site for at least one channel, the maximum and minimum wavelength-specific figures of merit;

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wherein determining a site-specific figure of merit for each site that is a drop site for at least one channel is performed only if the difference between the maximum and minimum wavelength-specific figures of merit for at least one site that is a drop site for at least one channel is greater than a threshold.

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31.(original) A method as claimed in claim 26, further comprising:  
for each channel, supplying that channel's power adjustment to a variable optical intensity controller at that channel's add site.

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32.(original) A method as claimed in claim 26, wherein determining the power adjustment for each channel comprises setting the power adjustment for each channel to

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the difference between the channel-specific figure of merit for that channel and the site-specific figure of merit for that channel's drop site.

5 33.(original) A method as claimed in claim 26, wherein determining the power adjustment for each channel comprises setting the power adjustment for each channel to the lesser of a maximum increment and the difference between the channel-specific figure of merit for that channel and the site-specific figure of merit for that channel's drop site.

10 34.(original) A method as claimed in claim 26, wherein determining the power adjustment for each channel comprises setting the power adjustment for each channel to a quantized approximation to the difference between the channel-specific figure of merit for that channel and the site-specific figure of merit for that channel's drop site.

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15 35.(original) A method as claimed in claim 26, wherein determining the power adjustment for each channel comprises setting the power adjustment for each channel to a fixed increment times the sign of the difference between the channel-specific figure of merit for that channel and the site-specific figure of merit for that channel's drop site.

20 36.(original) An equalizer for generating power adjustments used to control the transmit power of a plurality of channels, wherein each channel travels from a corresponding "add" site to a corresponding "drop" site in a WDM optical network, wherein each channel from among the set of channels either dropped at or travelling through a site occupies a distinct wavelength of light, comprising:

25 means for receiving a wavelength-specific figure of merit for each wavelength at each site;

means for determining a channel-specific figure of merit for each channel from the wavelength-specific figures of merit for those wavelength/site combinations corresponding to that channel;



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means for determining a site-specific figure of merit for each site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path; and

5 means for generating the power adjustment for each channel as a function of the channel-specific figure of merit for that channel and as a function of the site-specific figure of merit for that channel's drop site.

37.(original) Computer-readable media tangibly embodying a program of instructions executable by a computer to perform a method of generating power adjustments used to control the transmit power of a plurality of channels, wherein each channel travels from a  
10 corresponding "add" site to a corresponding "drop" site in a WDM optical network, wherein each channel from among the set of channels either dropped at or travelling through a site occupies a distinct wavelength of light, the method comprising:

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15 receiving a wavelength-specific figure of merit for each wavelength at each site; determining a channel-specific figure of merit for each channel from the wavelength-specific figures of merit for those wavelength/site combinations corresponding to that channel;

20 determining a site-specific figure of merit for each site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path; and

generating the power adjustment for each channel as a function of the channel-specific figure of merit for that channel and as a function of the site-specific figure of merit for that channel's drop site.

25 38.(original) At least one computer programmed to execute a process for generating power adjustments used to control the transmit power of a plurality of channels, wherein each channel travels from a corresponding "add" site to a corresponding "drop" site in a WDM optical network, wherein each channel from among the set of channels either dropped at or travelling through a site occupies a distinct wavelength of light, the process  
30 comprising:

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receiving a wavelength-specific figure of merit for each wavelength at each site;  
determining a channel-specific figure of merit for each channel from the  
wavelength-specific figures of merit for those wavelength/site combinations  
corresponding to that channel;

5 determining a site-specific figure of merit for each site that is a drop site for at  
least one channel from the wavelength-specific figures of merit associated with that  
channel's path; and

generating the power adjustment for each channel as a function of the channel-  
specific figure of merit for that channel and as a function of the site-specific figure of  
10 merit for that channel's drop site.

39.(original) A method of generating power adjustments used to control the transmit  
power of a plurality of channels, wherein each channel travels from a corresponding  
"add" site to a corresponding "drop" site in a WDM optical network, wherein each  
15 channel from among the set of channels either dropped at or travelling through a site  
occupies a distinct wavelength of light, the method comprising:

for each site which is a drop site for at least one channel, receiving a channel-  
specific figure of merit for each channel dropped at that drop site;

determining, for each site that is a drop site for at least one channel, a site-  
20 specific figure of merit from the channel-specific figures of merit for all channels dropped  
at that drop site; and

generating each channel's power adjustment as a function of the channel-specific  
figure of merit for that channel and as a function of the site-specific figure of merit for that  
channel's drop site.

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40.(original) An optical system, comprising:

a main optical path comprising a plurality of sites for carrying a plurality of  
channels therealong, each channel travelling from a corresponding one of the sites,  
30 known as an "add" site for that channel, to a corresponding other one of the sites, known

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as a "drop" site for that channel, wherein each site which is a drop site for at least one channel has a capability to determine a wavelength-specific figure of merit for each channel either dropped at or passing through that site, wherein each site which is an add site for at least one channel has a capability to control the transmit power of each  
5 channel for which it is an add site; and

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an equalizer connected to each site which is an add site for at least one channel and to each site which is a drop site for at least one channel, said equalizer being adapted to receive a wavelength-specific figure of merit for each wavelength at each site;  
10 determine a channel-specific figure of merit for each channel from the wavelength-specific figures of merit for those wavelength/site combinations corresponding to that channel; determine a site-specific figure of merit for each site that is a drop site for at least one channel from the wavelength-specific figures of merit associated with that channel's path; and generate the power adjustment for each channel as a function of the  
15 channel-specific figure of merit for that channel and as a function of the site-specific figure of merit for that channel's drop site.